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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/695,616

10/28/2003

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20311 7590 04/02/2008
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EXAMINER

VETERE, ROBERT A

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

04/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/695,616	Applicant(s) MURAKAMI ET AL.	
	Examiner ROBERT VETERE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner's Comments

1. Claims 21-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/8/2007.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-5, 11-13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi et al. (US 5,998,013) in light of George et al. (US 6,545,422).

Claims 1-2, 4-5 and 19: Shoshi teaches a method of forming an anti-glare coating on a transparent substrate such as a flat panel display (1:5-20), comprising the steps of applying a mixture of an ultraviolet-curable resin (2:32-43; 3:5-10), colloidal silica (2:32-43; 4:20-31) and an amine compound (2:32-43; 4:42-45) to the substrate and curing the coating using ultraviolet radiation (7:52-53) to yield an anti-glare coating which has a three dimensional roughness (Ra) between 0.05 and 0.5 μm (6:17-21). Shoshi teaches that this coating may be applied by any conventional means (7:42-46), but fails to explicitly teach that the coating is applied by an ink-jet apparatus. George teaches a method of applying an anti-glare coating using an ink-jet apparatus (10:13-25). Thus, because Shoshi teaches that the anti-glare coating can be applied by any conventional means and because George teaches that it is known in the art to use an ink-jet apparatus to apply an anti-glare coating, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the ink-jet apparatus, as taught by George, to apply the coating taught by Shoshi with the predictable expectation of successfully coating the substrate with an anti-glare coating.

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Claims 11-13: Shoshi also teaches that droplet contains a silica colloid dispersed in an organic solvent (claimed liquid) with a diameter smaller than the diameter of the droplet (the remainder of the droplet comprises an amine, 4:20-47) and that the difference of the refractive index between the liquid particle (silica – 1.46) and the medium used to form the droplet (triethylamine – 1.4001, 5:32-36) is at least 0.01.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi and George in light of Namoika (US 6,419,366).

Claim 3: Shoshi and George fail to expressly teach that the roughen structure contains 1 to 50 peaks per $100 \mu\text{m}^2$. Namoika teaches a method of forming an anti-glare layer, having an unevenness, with a value of Ra around $0.5 \mu\text{m}$ wherein the preferred spacing between peaks is between 4 and $40 \mu\text{m}$ (6:52-52). Because Namoika and Shoshi both teach methods of forming roughened anti-glare layers with an Ra of $0.5 \mu\text{m}$, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the spacing taught by Namoika in the method of Shoshi with the predictable expectation of successfully creating an anti-glare layer because Namoika teaches that it is preferable to have a peak spacing of 4 to $40 \mu\text{m}$. (A peak spacing of $4 \mu\text{m}$ would yield 4 peaks per $16 \mu\text{m}^2$; this is roughly 25 peaks per $100 \mu\text{m}^2$).

5. Claims 6-10, 15, 17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi and George in light of Ohishi et al. (US 2002/0034008).

Claims 6-7: While Shoshi teaches that the resin used is curable by ultraviolet light, it fails to expressly teach that the resin is heat curable. Ohishi, like Shoshi, teaches a method of forming an anti-glare layer on glass substrate (31) wherein the anti-glare layer comprises a resin, which is curable by radiation or heat (¶0016) and silica (¶ 0035) which form an ink that can be printed onto the substrate (¶ 0039). Furthermore, the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Thus, because Ohishi and Shoshi both teach methods of applying an anti-glare layer using a resin and silica, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted a heat-curable resin for the radiation-curable resin used

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in Shoshi, as taught by Ohishi, with the predictable expectation of successfully creating an anti-glare layer.

Claim 8: Ohishi also teaches that two different inks can be used having different compositions (first ink uses silica- see, e.g., ¶ 0036; second ink uses a fluorine-containing silicone- see, e.g., ¶¶ 0043-0044) and that these two compositions have different refractive indexes (see, e.g., ¶ 0043). The second layer, using a second ink composition, is applied to improve anti-reflection effects (¶ 0043). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a second layer, using a second ink composition, as taught by Ohishi, in the method of Shoshi in order to have further improved the anti-reflection effects.

Claims 9-10: Ohishi also teaches that the second ink is deposited after the first ink (¶ 0043, also see 38 and 39 in Fig. 3) that the first particles have a larger diameter (¶ 0036) than the second particles (¶ 0046) and also that the second formed layer has a roughened surface (see 39 in Fig. 3). Ohishi does not explicitly teach that the diameter of the droplets containing the first ink is larger than the diameter of the droplets containing the second ink. It does, however, teach that the particles which make up the first ink droplet have a diameter larger than the particles that make up the second droplet and also teaches that the layer formed by the first ink is larger than the layer formed by the second ink (¶¶ 0041, 0051). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the droplet sizes in order to determine the optimum droplet size needed to form the layers taught by Ohishi because one of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp.

Claims 15 and 17: Ohishi also teaches that the substrate has a plastic hard coat layer of tricetyl cellulose (TAC) applied on the glass substrate (¶ 0011, 36) onto which the anti-glare layer (38) is applied and that it is preferable to treat this plastic layer with a surface treatment, such as plasma, in order to improve the adhesion between the anti-glare layer and the plastic layer (¶ 0013). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a hard coat layer of TAC on the glass substrate in the method of Shoshi in order to have improved the adhesion between the anti-glare layer and the plastic layer.

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Claim 20: Ohishi also teaches that an anti-reflection layer is applied on the anti-glare layer to improve anti-reflection effects (§ 0043). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied an anti-reflection layer on top of the anti-glare layer in the method of Shoshi in order to have further improved the anti-reflection effects.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi and George in light of Logan et al. (US 4,575,730).

Claim 14: Shoshi and George teaches all the limitations of claim 1, as discussed above, but fail to teach that the ink-jet apparatus is subjected to vibrations to deposit the ink droplets randomly. Logan teaches that it is known in the art to apply vibration to an ink-jet apparatus to cause the droplets to be printed at random positions (6:41-46) in order to eliminate the structured appearance that is produced by traditional ink-jet printing (1:57-64), thus creating an uneven application. Thus, because Shoshi and George teach a method of coating a roughened anti-glare layer using an ink-jet apparatus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied a vibrational force, as taught by Logan, in the method of Shoshi and George, in order to have created a rougher application of the anti-glare coating.

7. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi, George and Ohishi in light of Hirose (US 6,533,852).

Claim 16: Shoshi, George and Ohishi teaches all the limitations of claim 15, as discussed above, but fail to expressly teach that the plastic hard coat is semi-cured. Hirose teaches a method of coating a display panel with a filter layer (1:11-16) wherein the display panel is first coated with an acrylic layer (claim 13) containing a polymerization initiator (claim 15) which is partially cured (claim 16) in order to reduce absorbency of the subsequently applied ink (claim 16). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have partially cured the plastic hard-coat layer Shoshi, George and Ohishi, as taught by Hirose in order to have reduced the absorbency of said layer when the ink is subsequently deposited on said layer.

8. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shoshi, George and Ohishi in light of Matsunaga et al. (US 6,398,371).

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Claim 18: Shoshi, George and Ohishi teaches all the limitations of claim 15, as discussed above, but fail to expressly teach that the plastic hard coat includes a plasticizer. As discussed above, Ohishi teaches that the plastic hard coat is comprised of TAC, but fails to expressly teach how this layer is formed. Matsunaga teaches a method of forming an anti-glare layer contiguous to a TAC layer (Abst.) wherein the TAC layer is comprises a plasticizer (5:8-17). Thus, because Ohishi and Matsunaga both teach methods of forming anti-glare layers on a TAC layer and because Ohishi is silent as to the formation of the TAC layer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated a plasticizer into the TAC, as taught by Matsunaga, with the predictable expectation of successfully forming a TAC layer.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT VETERE whose telephone number is (571)270-1864. The examiner can normally be reached on Mon-Fri 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Vetere/
Examiner, Art Unit 1792

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/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792